

FOAM INSULATION BOARD

CROSS REFERENCE TO RELATED APPLICATIONS

This application is a continuation of U.S. patent application Ser. No. 13/896,780, filed on May 17, 2013, which is a continuation-in-part of U.S. patent application Ser. No. 12/817,313, filed on Jun. 17, 2010, which is a divisional of U.S. patent application Ser. No. 11/025,623, filed on Dec. 29, 2004, now U.S. Pat. No. 7,762,040, which claimed priority to U.S. Provisional Patent Application Ser. No. 60/600,845 filed on Aug. 12, 2004. U.S. patent application Ser. No. 13/896,780 is also a continuation-in-part of U.S. patent application Ser. No. 13/241,949, filed on Sep. 23, 2011, which is a continuation-in-part of U.S. patent application Ser. No. 12/817,313, filed on Jun. 17, 2010, which is a divisional of U.S. patent application Ser. No. 11/025,623, filed on Dec. 29, 2004, now U.S. Pat. No. 7,762,040, which claimed priority to U.S. Provisional Patent Application Ser. No. 60/600,845 filed on Aug. 12, 2004. The disclosures of these applications are hereby fully incorporated by reference in their entirety.

FIELD OF THE INVENTION

The invention is related to an insulated fiber cement siding.

BACKGROUND OF THE INVENTION

A new category of lap siding, made from fiber cement or composite wood materials, has been introduced into the residential and light commercial siding market during the past ten or more years. It has replaced a large portion of the wafer board siding market, which has been devastated by huge warranty claims and lawsuits resulting from delamination and surface irregularity problems.

Fiber cement siding has a number of excellent attributes which are derived from its fiber cement base. Painted fiber cement looks and feels like wood. It is strong and has good impact resistance and it will not rot. It has a Class 1(A) fire rating and requires less frequent painting than wood siding. It will withstand termite attacks. Similarly composite wood siding has many advantages.

Fiber cement is available in at least 16 different faces that range in exposures from 4 inches to 10.75 inches. The panels are approximately $\frac{5}{16}$ inch thick and are generally 12 feet in length. They are packaged for shipment and storage in units that weigh roughly 5,000 pounds.

Fiber cement panels are much heavier than wood and are hard to cut requiring diamond tipped saw blades or a mechanical shear. Composite wood siding can also be difficult to work with. For example, a standard 12 foot length of the most popular $8\frac{1}{4}$ inch fiber cement lap siding weighs 20.6 pounds per piece. Moreover, installers report that it is both difficult and time consuming to install. Fiber cement lap siding panels, as well as wood composite siding panels, are installed starting at the bottom of a wall. The first course is positioned with a starter strip and is then blind nailed in the $1\frac{1}{4}$ inch high overlap area at the top of the panel (see FIG. 1).

The next panel is installed so that the bottom $1\frac{1}{4}$ inch overlaps the piece that it is covering. This overlap is maintained on each successive course to give the siding the desired lapped siding appearance. The relative height of each panel must be meticulously measured and aligned before the panel can be fastened to each subsequent panel. If any panel is installed incorrectly the entire wall will thereafter be miss-spaced.

Current fiber cement lap siding has a very shallow $\frac{5}{16}$ inch shadow line. The shadow line, in the case of this siding, is dictated by the $\frac{5}{16}$ inch base material thickness. In recent years, to satisfy customer demand for the impressive appearance that is afforded by more attractive and dramatic shadow lines virtually all residential siding manufacturers have gradually increased their shadow lines from $\frac{1}{2}$ inch and $\frac{5}{8}$ inch to $\frac{3}{4}$ inch and 1 inch.

SUMMARY OF THE INVENTION

Disclosed herein are embodiments of foam backing panels for use with lap siding and configured for mounting on a building. One such embodiment of the foam backing panel comprises a rear face configured to contact the building, a front face configured for attachment to the lap siding, alignment means for aligning the lap siding relative to the building, means for providing a shadow line, opposing vertical side edges, a top face extending between a top edge of the front face and rear face and a bottom face extending between a bottom edge of the front face and rear face.

Also disclosed herein are embodiments of siding panel assemblies. One such assembly comprises the foam backing panel described above, with the alignment means comprising alignment ribs extending a width of the front face, the alignment ribs spaced equidistant from the bottom edge to the top edge of the front face. A plurality of siding panels is configured to attach to the foam backing panel, each siding panel having a top face and a bottom face, the top face configured to align with one of the alignment ribs such that the bottom face extends beyond an adjacent alignment rib.

Also disclosed herein are methods of making the backing and siding panel. One such method comprises providing a siding panel and joining a porous, closed cell foam to a substantial portion of a major surface of the fiber cement substrate, the foam providing a drainage path through cells throughout the foam.

Also disclosed in embodiments is a foam insulation board comprising: a front face and a rear face; a first side face and a second side face; and a top face and a bottom face. The top face includes a top joining element, and the bottom face includes a bottom joining element complementary in shape to the top joining element. The first side face includes a first joining element, and the second side face includes a second joining element complementary in shape to the first joining element. An adhesive is present on at least one face of the top joining element, the bottom joining element, the first joining element, or the second joining element.

Several specific embodiments are contemplated. In one embodiment, the top joining element is a tongue, and the one face with the adhesive is a front face of the tongue. In another embodiment, the top joining element is a tongue, and the one face with the adhesive is an upper face of the tongue. In a different embodiment, the bottom joining element is a groove, and the one face with the adhesive is a rear face of the groove. In another embodiment, the bottom joining element is a groove, and the one face with the adhesive is a lower face of the groove. In the next embodiment, the second joining element is a tongue, and the one face with the adhesive is a front face of the tongue. In another embodiment, the second joining